

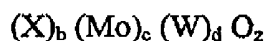
Serial No.: 09/869,988
Atty. Docket No.: GJH-0001
Family No.: P1997J057A
Amendment under CFR § 1.312
Date of submission: May 5, 2004

LISTING OF CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application. Claims 13, 14, and 15 are currently submitted for amendment.

1. (PREVIOUSLY PRESENTED) A hydroprocessing process, comprising:

contacting a feedstock, at hydrotreating conditions, with a bulk multimetallic catalyst represented by the formula:



wherein X is a Group VIII non-noble metal, and the molar ratio of b: (c+d) is 0.5/1 to 3/1.

2. (PREVIOUSLY PRESENTED) The process of claim 1 wherein the Group VIII non-noble metal is at least one of Ni and Co.

3. (PREVIOUSLY PRESENTED) The process of claim 1 wherein the ratio of Mo to W is from about 9:1 to about 1:9.

4. (CANCELED)

5. (PREVIOUSLY PRESENTED) The process of claim 1 wherein said molar ratio of b:(c+d) is 0.75/1 to 1.5/1.

Serial No.: 09/869,988
Atty. Docket No.: GJH-0001
Family No.: P1997J057A
Amendment under CFR § 1.312
Date of submission: May 5, 2004

6. (PREVIOUSLY PRESENTED) The process of claim 1 wherein said molar ratio of c:d is $>0.01/1$.

7. (PREVIOUSLY PRESENTED) The process of claim 1 further comprising sulfiding a multimetallic oxide precursor to form said bulk multimetallic catalyst, wherein the precursor comprises essentially an amorphous material having a unique X-ray diffraction pattern showing crystalline peaks at $d = 2.53$ Angstroms and $D = 1.70$ Angstroms.

8. (PREVIOUSLY PRESENTED) The process of claim 1 wherein said feedstock comprises at least one of naphtha, diesel, heavy gas oil, lube oil, and residuum virgin distillates.

9. (PREVIOUSLY PRESENTED) The process of claim 1 wherein said feedstock comprises naphtha boiling in the range of 25°C to 210°C , and said hydrotreating conditions include a reaction temperature of 100°C to 370°C , a pressure of 10 Bar to 60 Bar, a space velocity of 0.5 to 10 V/VHr, and a hydrogen gas treat rate of 100 to 2,000 SCF/B.

10. (PREVIOUSLY PRESENTED) The process of claim 1 wherein said feedstock comprises diesel boiling in the range of 170°C to 350°C , and said hydrotreating conditions include a reaction temperature of 200°C to 400°C , a pressure of 15 Bar to 110 Bar, a space velocity of 0.5 V/VHr to 4 V/VHr, and a hydrogen gas treat rate of 500 SCF/B to 6,000 SCF/B.

Serial No.: 09/869,988
Atty. Docket No.: GJH-0001
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11. (PREVIOUSLY PRESENTED) The process of claim 1 wherein said feedstock comprises heavy gas oil boiling in the range of 325°C to 475°C, and wherein said hydrotreating conditions include a reaction temperature of 260°C to 430°C, a pressure of 15 Bar to 170 Bar, a space velocity of 0.3 V/V/Hr to 2 V/V/Hr, and a hydrogen gas treat rate of 1,000 SCF/B to 6,000 SCF/B.

12. (PREVIOUSLY PRESENTED) The process of claim 1 wherein said feedstock comprises a lubricating oil boiling in the range of 290°C to 550°C, and wherein said hydrotreating conditions include a reaction temperature of 200°C to 450°C, a pressure of 6 Bar to 210 Bar, a space velocity of 0.2 V/V/Hr to 5 V/V/Hr, and a hydrogen gas treat rate of 100 SCF/B to 10,000 SCF/B.

13. (CURRENTLY AMENDED) The process of claim 1 wherein said feedstock comprises a residuum having a 10% to 50% boiling range of 575°C, and wherein said hydrotreating conditions include a reaction temperature of 340°C to 450°C, a pressure of 65 Bar to 1100 Bar, a space velocity of 0.1 V/V/Hr to 1 V/V/Hr, and a hydrogen gas treat rate of 2,00 2,000 SCF/B to 10,000 SCF/B.

14. (CURRENTLY AMENDED) The process of claim 1 wherein the bulk multi-metallic catalyst comprises particles having a median diameter of at least 50 nm, a surface area of at least 10 m²/gm, a pore volume ranging from 0.05 to 5 ~~ml/g~~ ml/g, and an absence of pores small than 1 nm.

15. (CURRENTLY AMENDED) The process of claim 14 wherein said bulk multimetallic catalyst particle comprises a ~~core-shell~~ core-shell structure.

Serial No.: 09/869,988
Atty. Docket No.: GJH-0001
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16. (CANCELED)

17. (PREVIOUSLY PRESENTED) The process of claim 1 further comprising contacting at least one of said feedstock and hydroprocessed product with a catalytically effective amount of a second catalyst under catalytic conversion conditions.

18. (PREVIOUSLY PRESENTED) The process of claim 17 wherein said second catalyst comprises at least one of a hydroprocessing catalyst, a cracking catalyst, and an isomerization catalyst.

19. (PREVIOUSLY PRESENTED) The process of claim 18 wherein said second catalyst is present in at least one of

- (i) a first reaction zone or zones upstream of said bulk multimetallic catalyst;
- (ii) a second reaction zone or zones containing said bulk multimetallic catalyst; and
- (iii) a third reaction zone or zones downstream of said bulk multimetallic catalyst.

20. (PREVIOUSLY PRESENTED) The process of claim 1 wherein said bulk multimetallic catalyst is a sulfided catalyst.

21. (PREVIOUSLY PRESENTED) The process of claim 1 wherein said bulk multimetallic catalyst is sulfided in-situ.